

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1-112. (cancelled)

113. (currently amended) A stable composition comprising:

an ionic liquid of formula $A_1^+X_1^-$ with a first part providing a liquid matrix of A_1^+ and/or X_1^- ionic entities linked to one or more initial functions F_0 and a second part providing a functionalized salt $\underline{A_1^+X_1^-}$ as a soluble reaction support, the liquid matrix and functionalized salt forming a homogeneous phase, wherein,

the functionalized salt is recyclable,

the functionalized salt converts the one or more initial functions F_0 into first novel functions of the second part of the ionic liquid, and,

the first novel functions of the second part of the ionic liquid are capable of being subsequently converted to other functions, without affecting the initial function or functions F_0 of the first part of the ionic liquid.

114. (currently amended) A stable composition comprising, in solution:

an ionic liquid of formula $A_1^+X_1^-$ providing a liquid matrix; and

one functionalized salt of formula $A_2^+X_2^-$ providing a soluble reaction support to allow (i) catching of one or more molecules, (ii) functionalizing said molecules, and (iii) releasing of functionalized molecules after a reaction sequence,

said functionalized salt being recyclable, and

said functionalized salt being dissolved in the liquid matrix so that the composition forms a homogeneous phase, wherein,

A_1^+ is a non-functional cation or a mixture of cations in which none of the cations is functional,

X_1^- is a non-functional anion or a mixture of anions in which none of the anions is functional,

A_2^+ is selected from the group consisting of a functional cation, non-functional cation, a mixture of cations in which none of the cations is functional, and a mixture of cations in which at least one cation is functional,

X_2^- is selected from the group consisting of a functional anion, a non-functional anion, a mixture of anions in which none of the anions is functional, and a mixture of anions

in which at least one anion is functional, at least one of A_2^+ and X_2^- is a functional ion,

said functional cation is of a formula $\cancel{Y^+}-\cancel{L}-F_{\pm}$ Y^+-L-F_i
and said functional anion is of a formula $\cancel{Y^-}-(\cancel{L})_k-\cancel{F_{\pm}}$ $Y^--(L)_k-F_i$,

Y^+ and Y^- are ionic entities that carry the charge of the cation and the charge of the anion, respectively, linked via an linker L to at least one function F_i ,

L is an alkyl group of 1 to 20 carbon atoms,

F_i varies from F_0 to F_n , n being an integer varying from 1 to 10, with F_0 being a function initially linked to said cationic entities and anionic entities and F_1 to F_{10} being functions converted from said F_0 after sequential and subsequent reactions with said cationic or anionic entities,

said function F_i is selected from the group consisting of hydroxyl, carboxylic, amide, sulphone, primary amine, secondary amine, aldehyde, ketone, ethenyl, ethynyl, dienyl, ether, epoxide, primary phosphine, secondary phosphine, tertiary phosphine, azide, imine, ketene, cumulene, heterocumulene, thiol, thioether, sulphoxide, phosphorus-containing moieties, heterocycles, sulphonic acid, silane, stannane and functional aryl functions,

k is equal to 0 or 1, and

R is an alkyl group of 1 to 20 carbon atoms or an aryl group of 6 to 30 carbon atoms.

115. (previously presented) The composition of claim 114, wherein the

A_2^+ cation and/or the X_2^- anion of the functionalized salt or salts, corresponding to a Y^- ionic entity linked to at least one function F_1 , are immobilized in the liquid matrix and cannot be extracted from the liquid matrix by solvent extraction.

116. (previously presented) The composition of claim 114, wherein, the liquid matrix is non-reactive vis-à-vis the functionalized salt.

117. (previously presented) The composition of claim 114, wherein A_2^+ is a functional cation.

118. (previously presented) The composition of claim 117, wherein the X_1^- and X_2^- anions are identical.

119. (previously presented) The composition of claim 117, wherein,

the A_1^+ and A_2^+ cations are onium cations selected from the group consisting of substituted or non-substituted pyridinium, imidazolium, ammonium, phosphonium or sulphonium cations, and

the X_1^- and X_2^- anions are selected from the group consisting of non-complex anions and complex anions,

non-complex anions being selected from the group consisting of: BF_4^- , PF_6^- , $CF_3SO_3^-$, CH_3COO^- , $CF_3CO_2^-$, $N(SO_2CF_3)_2$, halides, BR_4^- , RCO_2^- and RSO_3^- with R selected from the group consisting of an alkyl group of 1 to 20 carbon atoms, an aryl group of 6 to 30 carbon atoms, a perfluorinated group and partially fluorinated group, and $R'SO_4^-$ anions with R' selected from the group consisting of a hydrogen atom, a methyl group and an ethyl group, and

complex anions resulting from the combination of a Lewis acid and a halide X, said complex anion being of general formula MX_j with j being an integer between 1 and 7, and M representing a metal selected from the group consisting of aluminum, tin, zinc, bismuth, manganese, iron, copper, molybdenum, antimony, gallium or indium.

120. (previously presented) The composition of claim 114, wherein,

the Y^+ - cationic entity carries the positive charge of the cation and is linked via an linker L to a function F_0 ,

L is an alkyl group comprising 1 to 20 carbon atoms, and,

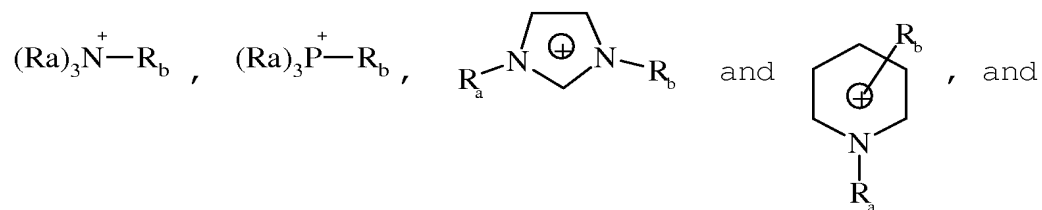
function F_0 is selected from the group consisting of

hydroxyl, carboxylic, amide, sulphone, primary amine, secondary amine, aldehyde, ketone, ethenyl, ethynyl, dienyl, ether, epoxide, phosphine (primary, secondary or tertiary), azide, imine, ketene, cumulene, heterocumulene, thiol, thioether, sulphoxide, phosphorus-containing moieties, heterocycles, sulphonic acid, silane, stannane and functional aryl functions.

121. (previously presented) The composition of claim 114, wherein,

X_1^- is selected from the group consisting of: NTf_2^- , PF_6^- , BF_4^- and $CF_3SO_3^-$,

A_1^+ is selected from the group consisting of:

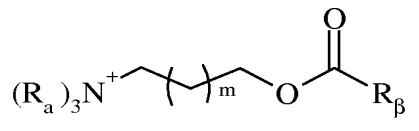
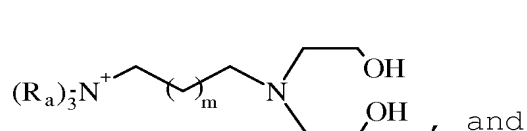
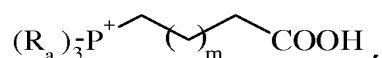
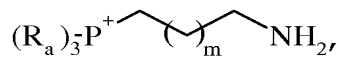
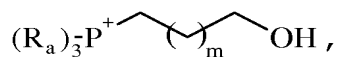
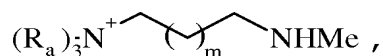
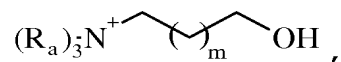


R_a and R_b are linear or branched alkyl groups of 1 to 20 carbon atoms, functional alkyl groups of 1 to 20 carbon atoms, or functional or non-functional aryl groups of 6 to 30 carbon atoms.

122. (previously presented) The composition of claim 114, wherein

X_2^- is selected from the group consisting of: NTf_2^- , PF_6^- , BF_4^- , Cl^- , Br^- , I^- , $CF_3SO_3^-$, $MeSO_4^-$, $EtSO_4^-$, $MeSO_3^-$, $C_6H_5SO_3^-$, and $pMeC_6H_4SO_3^-$,

A_2^+ is selected from the group consisting of:



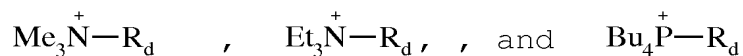
m is an integer comprised between 0 and 20,

R_β is selected from the group consisting of a substituted or non-substituted vinyl group, a functional aryl group of 1 to 20 carbon atoms, and a functional alkyl group of 6 to 30 carbon atoms, and

R_a is a branched or non-branched alkyl group of 1 to 20 carbon atoms.

123. (previously presented) The composition of claim 114, wherein,

A_2^+ is selected from the group consisting of



R_d is an alkyl group comprising 1 to 20 carbon atoms,

X_2^- is a functional anion corresponding to an anion of a conjugated acid having a pK_A less than 30, and is selected from the group consisting of: OH^- , F^- , $R_cBZ_3^-$, N_3^- , CN^- , and $\overline{WCR_cV}$,

Z is $-F$, $-OH$, or an $-OR$ group, R being an alkyl group comprising 1 to 20 carbon atoms,

V and W are, independently of each other, an electroattractive group selected from the group consisting of a cyano, a alkoxycarbonyl moiety of 2 to 20 carbon atoms, acyl moiety of 2 to 20 carbon atoms, benzoyl, alkyl sulphonyl moiety of 1 to 20 carbon atoms, aryl sulphonyl moiety of 6 to 30 carbon atoms, and dialkoxyphosphonyl moiety of 2 to 20 carbon atoms, and

R_c is selected from the group consisting of a branched, non-branched, cyclic or non-cyclic alkyl moiety of 1 to 20 carbon atoms and an aryl moiety of 6 to 30 carbon atoms.

124. (currently amended) A stable composition comprising:

an ionic liquid matrix of formula $A_1^+X_1^-$ with non-functional ions, and,

a functionalized salt of formula $A_2^+X_2^-$ with at least one functional ion ~~that~~,

said functionalized salt being ~~that~~ dissolved in the ionic liquid matrix so that the composition forms a homogeneous phase, and

said functionalized salt participating in organic synthesis reactions by (i) catching molecules, (ii) functionalizing of said molecules, and (iii) releasing of said functionalized molecules after a reaction sequence, wherein,

A_1^+ and A_2^+ are substituted or non-substituted onium cations selected from the group consisting of pyridinium, imidazolium, ammonium, phosphonium or sulphonium cations, and,

X_1^- and X_2^- anions are selected from the group consisting of BF_4^- , PF_6^- , $CF_3SO_3^-$, CH_3COO^- , $CF_3CO_2^-$, $N(SO_2CF_3)_2^-$, halides, BR_4^- , RCO_2^- and RSO_3^- with R selected from the group consisting of an alkyl group of 1 to 20 carbon atoms, an aryl group of 6 to 30 carbon atoms, a perfluorinated or partially fluorinated group, $R'SO_4^-$ with R' being selected from the group consisting of a hydrogen atom, a methyl group or an ethyl group, and complex anions resulting from the combination of a Lewis acid

and a halide X of general formula MX_j with j being an integer between 1 and 7, X being a halide and M representing a metal selected from the group consisting of aluminum, tin, zinc, bismuth, manganese, iron, copper, molybdenum, antimony, gallium or indium,

said at least one functional ion is one of a functional cation of a formula is Y^+-L-F_i Y^+-L-F_i and a functional anion of a formula $Y^--(L)_k-F_i$ $Y^--(L)_k-F_i$,

Y^+ and Y^- are ionic entities that carry the charge of the cation and the charge of the anion, respectively,

L is an alkyl group of 1 to 20 carbon atoms,

F_i is a function varying from F_0 to F_n , and selected from the group consisting of hydroxyl, carboxylic, amide, sulphone, primary amine, secondary amine, aldehyde, ketone, ethenyl, ethynyl, dienyl, ether, epoxide, primary phosphine, secondary phosphine, tertiary phosphine, azide, imine, ketene, cumulene, heterocumulene, thiol, thioether, sulphoxide, phosphorus-containing moieties, heterocycles, sulphonic acid, silane, stannane and functional aryl functions,

F_0 being a function initially linked to said ionic entities,

n being an integer varying from 1 to 10 representing a number of reactions,

F_1 to F_{10} being functions converted from said F_0 after

sequential reactions with said ionic entities,

k is equal to 0 or 1 and

R is an alkyl group of 1 to 20 carbon atoms or an aryl group of 6 to 30 carbon atoms.

125. (new) The composition according to claim 114, wherein,

$k=0$ such that $Y^-(L)_k-F_i$ is Y^-F_i ,

Y^-F_i represents a single anion selected from the group consisting of OH^- , F^- , CN^- , RO^- and RS^- , and

R represents a 1 to 20 carbon atom alkyl group or 6 to 30 carbon atom aryl group.

126. (new) The composition according to claim 124, wherein,

$k=0$ such that $Y^-(L)_k-F_i$ is Y^-F_i ,

Y^-F_i represents a single anion selected from the group consisting of OH^- , F^- , CN^- , RO^- and RS^- , and

R represents a 1 to 20 carbon atom alkyl group or 6 to 30 carbon atom aryl group.